

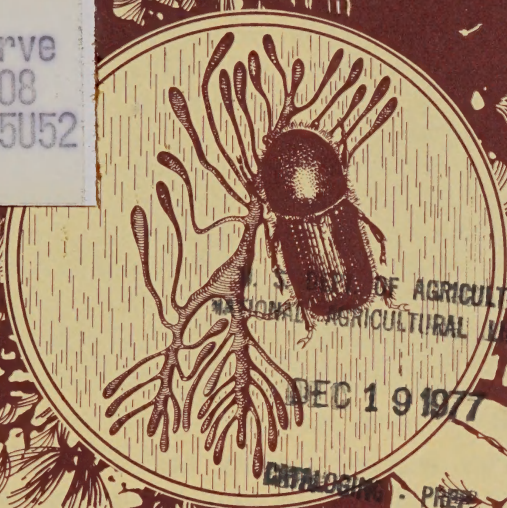
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THE PINE ENGRAVER BEETLE

IN THE NORTHERN REGION

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THE
PINE ENGRAVER BEETLE
IN THE NORTHERN REGION

Periodically, thousands of ponderosa pines are killed by the pine engraver beetle *Ips pini* (Say) in Montana, northern Idaho, and northeastern Washington. These small bark beetles can kill a single tree or groups of several hundred trees. Ips beetles also kill lodgepole pine, but the number of lodgepole pine killed is less than the ponderosa toll.

The adult pine engraver is reddish-brown and about 1/8 inch long. It is easy to distinguish from the western pine beetle, which is commonly associated with it in pines. The pine engraver's posterior end is cut off at an angle, is hollowed out, and bears a number of tiny spines.

LIFE CYCLE

Pine engraver activity begins in the spring when the hibernating adult beetles emerge from slash and duff around the base of infested trees. Beetles prefer fresh slash or trees weakened by drought, fire, and site disturbance, such as road construction or home foundation digging. Standing green trees are generally attacked when slash, stumps, etc., are not available.

The adult male beetle bores through the outer bark to the soft inner layer where he constructs a mating chamber. He is joined by two to four females. After mating each female constructs her own egg gallery radiating out from the mating chamber. The galleries are built in many patterns, but the most common pattern is an inverted "y." Within a week, eggs hatch into grub-like larvae. The larvae feed in the soft inner bark, at right angles to the egg gallery, for a period of about 30 days. When the feeding period is finished, larvae transform to pupae, or a resting stage, at the end of the larval mines. Within a week, the pupae transform to adult beetles. The life cycle, or a generation, is completed when new adults bore out of the tree in June and find and attack fresh breeding material.

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The beetle produces two generations — sometimes a partial third — yearly. Temperature and moisture are governing factors in the establishment of the third generation. Approximately 45 to 60 days are required to complete a generation.

The second generation usually bores out of the trees by August 1. The largest number of standing green trees is usually killed by this generation of beetles. When there is insufficient slash, or the slash, stumps, or logging debris is too dry and unattractive to attacking adults, the beetle prefers green trees.

Establishment of a third generation is dependent on temperatures and moisture during beetle flight. Cool fall temperatures and excessive moisture prevent adult beetles from establishing a third generation. Instead, adults from the second generation will hibernate in the duff at the bases of trees killed by the second generation; or they may hibernate in slash and stumps. Some may overwinter in the brood trees as larvae or pupae.

1. *Beetle eggs, the first stage in the life of the pine engraver beetle. Eggs hatch in about one week.*





2. Larva or "grub" destroy the inner bark of the tree.

Production of a partial third generation often results in high mortality among the beetles during the winter. The surviving brood develops to adults, emerges from trees, and extends the flight period of the hibernating adult beetles.

INJURY When Ips attack logs and down timber, the first evidence is small piles of reddish-brown boring dust around the entrance holes. On standing trees, this boring dust is in the bark crevices. Within a month after attack, the color of the foliage on green trees begins to turn light green. This fading of the pine needles is a sign of a successful attack. The tree will probably die. Trees killed by the second generation of beetles may not "fade" until mid-October. The foliage eventually turns yellow.

PREVENTION Great care in planning ponderosa pine tree cutting can help prevent pine engraver beetle damage. A majority of the outbreaks start in, or near, thinning areas, logging slash, and road construction. Time of year for cutting and slash disposal should be considered



3. *Pupa, the beetle's resting stage, during the 4th to 5th week of their life.*

when disturbing pine stands. Ips populations are less likely to build up in slash laid down late in the fall.

Thinning should be curtailed during years of low rainfall, especially during excessively dry spring months. Thinning debris containing beetles should be piled and burned before the beetles emerge. Where cost prohibits piling and burning, broods can be reduced by exposing slash to direct sunlight. Slash under 8 inches in diameter can be put through a chipper.

When none of these methods are feasible, it is best in large thinning areas to plan thinning so a constant supply of green slash is available for the next generation of attacking beetles. Always destroy breeding material before the second generation of Ips emerges.

These methods may curtail, or only slow down, the incidence of Ips buildup in the slash and infesting standing green trees.

Disposal of infested logging slash is essential in preventing damage. Fire-scorched trees, once

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they become infested, should be removed to lessen the chance of adjacent standing green trees being infested.



4. *Adult beetle emerges from infested material 45 to 60 days after the eggs have been deposited.*

